REMARKS/ARGUMENTS

Claims 1, 3, 5-10, 12-14, 16-17 and 49 are pending. Claims 13 and 16 have been amended. Claims 2, 4, 11, 15 and 18-48 have been previously canceled. No new matter has been added. Reexamination and reconsideration of the present application is respectfully requested.

The Examiner has suggested submitting a copy of the ATCC Deposit as it did not appear to be part of the record. The Applicant submits herewith a copy of the ATCC Deposit.

SPECIFICATION

The Examiner has objected to the amendment under 35 U.S.C. 132(a) as introducing new matter in regards to the statement that:

"*Nitrococcus mobilis*-like nitrite oxidizing bacterium (represented by SEQ ID NO:1 and SEQ ID NO:2)"

Thus, the Applicant cancels the new matter and submits the following statement in its place:

"*Nitrococcus*-like nitrite oxidizing bacterium (represented by SEQ ID NO:1 and SEQ ID NO:2)"

Support can be found in the specification, for example, p. 4, line 31 to p. 5, line 1. The Applicant respectfully requests that the objection be withdrawn.

CLAIM REJECTIONS

35 U.S.C. § 112, first paragraph

The Examiner rejected claims 13-16 as lacking basis or support in the present specification for compositions "comprising at least two isolated bacterial strains that oxidize nitrite to nitrate, wherein each of the at least two bacterial strains have 16S rDNA including a nucleotide sequence comprising SEQ ID NO:1, and a nucleotide sequence independently selected from the group consisting of nucleotide sequences SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, and SEQ ID NO:8." The Applicant has amended the claim so that there is support found in the specification, for example, p. 5, lines 22-29 and claim 13 as originally filed.

35 U.S.C. § 112, second paragraph

The Examiner rejected claim 13 as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention, namely, claim 13 as written is vague and indefinite. The Applicant has amended the claim to clarify the invention.

The Examiner rejected claim 16 for lacking antecedent basis and the Applicant has amended the error. The Applicant thanks the Examiner for noting the error.

The Applicant respectfully requests that the above 112 rejections be withdrawn.

35 U.S.C. § 102

The Examiner rejects the claims in view of U.S. Patent No. 6,207,440 to Hovanec ("Hovanec"). The Applicant respectfully disagrees as follows.

Hovanec is directed generally to bacteria that facilitates the nitrification process. The claimed nucleotide sequence and cultures of such strains comprise a nucleotide sequence having a specific similarity with SEQ ID NO:1. SEQ ID NO:1 is identified as a *Nitrospira*-like NOB, and more specifically, a NOB deposited as ATCC Accession No. 202186. In contrast, the present claims are directed to a nucleotide sequence and cultures of a *Nitrococcus*-like bacteria that oxidizes nitrite to nitrate, namely, a completely different nucleotide sequence identified as SEQ ID NO:1. *See e.g.*, Specification p. 4, lines 28-29, p. 4, line 31-p. 5, line 1, p. 9; *see also* ATCC Deposit (*Nitrococcus*-like NOB represented by SEQ ID NO:1 has been deposited as accession number PTA-5424). The nitrification process requires the mediation of two distinct groups: bacteria that convert ammonia to nitrites (*Nitrosomonas,* ***Nitrosospira,*** *Nitrosococcus,* and *Nitrosolobus*) and bacteria that convert nitrites (toxic to plants) to nitrates (*Nitrobacter, Nitrospina,* and ***Nitrococcus***). In fact, Hovanec expressly teaches that *Nitrospira*-like bacteria are phylogenetically different than those that fall within the *Nitrococcus* group. In Figure 1, it is shown that chemolithoautotrophic nitrite-oxidizing bacteria are phylogenetically diverse, occurring in several subdivisions of the Proteobacteria. While *Nitrospira*-like bacteria belong to the α subdivision of Proteobacteria, *Nitrococcus*-like bacteria have been determined to be members of the γ subdivision of the Proteobacteria. Col. 1, line 58-Col. 2, line 4. Moreover, the present disclosure teaches that certain probes target *Nitrococcus*-like nitrite-oxidizing organisms to the exclusion of all *Nitrospira*-like nitrite–oxidizing organisms, while other probes target all *Nitrospira*-like bacteria found in the study to the exclusion of other nitrite-oxidizers, such as the *Nitrococcus*-like bacteria. Specification, pp. 34-35.

The present claims all require a nucleotide sequence of an **exact** identity (SEQ ID NO:1, *Nitrococcus*-like) and which hybridize under specific stringent conditions (hybridization in 30% formamide, 0.9 M NaCl, 0.01% sodium dodecyl sulphate, 20 mM Tris/HCl pH 7.4 at 46 °C, and washing with 120 mM NaCl, 5 mM EDTA, 0.01% sodium dodecyl sulphate, and 20 mM Tris/HCl at 48 °C). IThe Examiner appears to suggest that Hovanec prevents patentability of every type of NOB, no matter what the specific nucleotide sequence. Given the large variants of bacteria types within each of these subdivisions, and their own unique characteristics, Hovanec does not render obvious the specific strains claimed, much less teach or suggest every one of the claim limitations. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987); MPEP §2131. As Hovanec is directed to a completely different type of NOB than that of the present application, Hovanec does not teach each and every element as claimed in the present application. "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). Hovanec teaches and discloses a *Nitrospira*-like strain and methods of testing for and/or obtaining the *Nitrospira*-like strain. There is no teaching or suggestion of testing for and/or obtaining any *Nitrococcus*-like strain as claimed. In fact, both Hovanec and the present disclosure makes it clear that the two bacteria types are distinct groups—phylogenetically different and requiring different probes for isolation. Thus, Hovanec does not does not anticipate nor render obvious the present claims.

Furthermore, Hovanec, does not disclose details sufficient to enable one of ordinary skill in the art to make or use the claims invention, especially considering the unpredictable nature of microbiology and biotechnology. As Hovanec only teaches and discloses a *Nitrospira*-like strain and methods of testing for and obtaining the *Nitrospira*-like strain, there is insufficient information to enable one of ordinary skill in the art to make and use any such sequences and cultures having the specifically claimed *Nitrococcus*-like nucleotide sequence without undue experimentation. *See e.g., Enzo Biochem., Inc. v. Calgene, Inc.*, 188 F.3d 1362, 1379 (Fed. Cir. 1999)("[A] party may not avoid its burden of proof by making a blanket statement that its proof with respect to one patent apply to another and not provide a formal analysis why that is true."); *see also Par Pharmaceuticals v. Roxane Labs*, 2007 WL 3151692 (Fed. Cir. October 26, 2007). By determining that success and adequate disclosure of a genetic technique in one organism imputes merely a "germ of an idea" in relation to other organisms, the *Enzo Biochem* court implied that patents for genetic techniques are limited to the specific organisms on which the patentee has enabled the invention. *Enzo Biochem., Inc.*, at 1374-75. Thus, while Hovanec reasonably teaches a particular bacterial strain, it cannot be used to show that all bacterial strains can be similarly manipulated by reasonable experimentation. *Id.*

In light of the above considerations, Applicants respectfully submit that the presently amended claims are patentable over the above rejections. It is therefore respectfully requested that the Examiner's rejections of claims 1, 3, 5-10, 12-14, 16-17 and 49 be withdrawn.

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CONCLUSION

The Applicant believes that claims 1, 3, 5-10, 12-14, 16-17 and 49 are now in condition for allowance, and a favorable action is respectfully requested. If, for any reason, the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the Examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

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Encl.: ATCC Biological Deposit